Economics and Sociology
Occasional Paper #813

INTERACTION OF PRICE AND CREDIT POLICIES IN COSTA RICAN AGRICULTURE

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March, 1981

Paper Prepared for
The Caribbean Agricultural Credit Training Committee (CACTCOM)
Senior Management Workshop
Georgetown, Guyana, November 17-20, 1980

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I. Introduction

The stagnation of Costa Rican agriculture in the latter part of the 1970s has become a subject of considerable concern. A leading Costa Rican economist, Eduardo Lizano, has documented this stagnation in his recent book, Agricultura y Desarrollo Economica which shows that the growth rate of value added in agriculture failed to average even one percent annually in the 1973-77 period while the growth rate of gross domestic product (GDP) averaged more than 5 percent per year over the same period.[1/] Furthermore, this growth rate for the agricultural sector is substantially below the 5-6 percent annual growth rate achieved in earlier periods, such as 1968-72, when agricultural growth was only slightly less than the growth rate of GDP. An important characteristic of this stagnation, as Lizano points out, is that it is not concentrated in one or two products but rather tends to be spread throughout the agricultural sector.

In his search for the possible causes of this stagnation, Lizano proposes and then dismisses a variety of natural factors such as droughts, floods,

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1/ See Chapter II.

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diseases and insect infestations. He also examines the availability of land and labor resources and concludes that changes in these factors cannot explain the stagnation of agriculture. After a brief discussion of prices and markets, Lizano dismisses these factors as a main cause of the stagnation, and he also finds no causal relationship between agricultural production and credit from the national banking system. Lizano concludes that the causes of the stagnation cannot be identified without further study, but that research and extension together with improvements in managerial capacity should receive top priority in the search for a solution to agricultural stagnation.

The purpose of the present paper is to examine the impact of price, exchange rate and credit policies on the aggregate performance of Costa Rican agriculture during the 1970s. It will be argued that Costa Rica, not unlike many other developing countries, has pursued price, exchange rate and credit policies which have adversely affected the performance of the agricultural sector. The failure of Lizano's study to find a role for prices is due to the failure to use "real" prices (that is, to adjust nominal prices for inflation) and the failure to compare domestic prices with international prices. Agricultural price policy in developing countries is often based on a compromise between forces that argue for domestic self-sufficiency and hence high prices and those that argue for low prices to stimulate industrial processing of raw materials and to provide low cost food for urban, industrial workers. Such a compromise often tends to emphasize the level of nominal prices rather than real prices, and this becomes particularly serious in an inflationary setting where prices are adjusted with a lag. Moreover, domestic prices are rarely compared to international prices, and when such comparisons are made, the appropriateness of the exchange rate is seldom considered. Government

credit policies for the agricultural sector typically focus on preferential low interest rates and fail to recognize that credit is fungible and cannot easily be tied to particular activities. Moreoever, in an inflationary setting such interest rate policies discourage banks from maintaining the real volume of agricultural lending while providing substantial income transfers to a relatively few credit recipients.

The analysis in the present paper focuses on the behavior during the 1970s of twelve of Costa Rica's principal agricultural products: rice, corn, beans, sorghum, coffee, bananas, cocoa, sugarcane, beef, milk, hogs and broilers. The following section relates the output performance for these products to their real (deflated) prices after discussing the various Costa Rican governmental institutions which control agricultural prices. The next section compares the prices of these products to international prices, that is, the prices of these products in the United States. International price comparisons are made at the official exchange rate and at a more appropriate exchange rate which takes into account the substantial over-valuation of the official rate. The next to the last section relates output to the real volume of bank credit for each of these products and then explains why the relationship between credit and output is so weak. Government interest rate policies, both before and after the financial reform of late 1978, are examined with respect to their implications for the allocation of credit to the agricultural sector. The final section summarizes the main conclusions of the analysis for government price and interest rate policies.

II. Production and Real Domestic Prices

Basic Grains and Beans

Two government institutions play a major role in determining prices of basic grains. The Consejo Nacional de Produccion (CNP), established in 1943, has considerable authority to intervene in the marketing of food products. According to the Organic Law which created the CNP, it has the responsibility to: promote agricultural and industrial production; stabilize prices of food and industrial raw materials; pursue a fair equilibrium between the interests of producers and consumers; and seek the improvement of living conditions of Costa Rican people.[2/] Even though it has wide discretion with respect to the number and kind of agricultural products subject to its market intervention policies, the CNP has chosen to concentrate on those grains which represent a substantial proportion of the value of agricultural output (rice, beans, corn and sorghum).[3/] The key feature of CNP market intervention policies are the price support program which guarantees minimum purchase prices to farmers for these basic grains and the monopoly control which the CNP has over imports and exports which effectively protects the domestic market from the international market. To implement the price support program, the CNP has a series of purchasing agencies located in the main producing areas as well as storage and processing facilities. In addition to the CNP, the Ministerio de Economia, Industria y Commercio (MEIC) has an important role in controlling the retail

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[2/] Organic Law of the Consejo Nacional de Produccion, Chapter I, Article 4.

[3/] The CNP also administers the state-owned monopoly of liquor manufactured in Costa Rica, owns a network of retail sales outlets distributed throughout the country in which it sells staple goods to consumers, and determines the export quota for beef which will be discussed later in this section.

prices for basic grains, the marketing margins for these products, and in coordinating its price control policy with the CNP's price support policy.

A level of prices high enough to stimulate production yet one which guarantees consumers an abundant, low-cost supply of food is usually the focus of much controversy in institutions which have price control responsibility such as the CNP and MEIC. Price setting becomes a more complicated issue in an inflationary economy where the level of nominal or current prices may be quite different from "real" prices, that is, nominal prices adjusted for inflation by some deflator such as that for Gross Domestic Product (GDP). Although the attention of policy makers is usually focused on nominal prices, these prices are useless as indicators of price incentives in an inflationary economy where a high nominal price may, after a time without adjustment, become a low real price which no longer provides any incentive to increase production. For these reasons, this section of the paper will analyze trends in production compared to the deflated farm price of the selected products.

The production-consumption balance for the basic grains is such that Costa Rica is self sufficient in rice, which has even been exported in some recent years, and deficit in the others. Corn production is equal to approximately 90 percent of consumption, while sorghum and bean production are sufficient for about half of the domestic consumption of these products. (Since Costa Rica does not produce wheat, it must import all the wheat for domestic consumption.)

As can be seen in Table 1, even though the production of rice in Costa Rica is quite variable from year to year, it has increased significantly from 55.6 thousand metric tons in 1970 to 134.9 thousand metric tons in 1979 (an 18

Table 1: Production and Prices of Basic Grains, 1970-1979

Calender Year	COMMODITY: RICE Production	RICE Deflated Farm Prices[a]	CORN Production	CORN Deflated Farm Price[a]	BEANS Production	BEANS Deflated Farm Prices[a]	SORGHUM Production	SORGHUM Deflated Farm Prices[a]
	Metric Tons	Colones per ton	Metric Tons	Colones per ton	Metric Tons	Colones per ton	Metric Tons	Colones per ton
1970	55,621	981	71,294	452	12,024	1017	7,278	389
1971	68,723	840	70,073	488	8,925	1196	11,887	417
1972	62,719	878	75,910	466	14,203	1148	13,806	425
1973	81,640	896	65,476	458	11,031	1790	16,419	534
1974	62,230	1095	60,519	593	13,750	1944	14,129	542
1975	112,132	1060	67,767	659	14,625	2003	19,780	580
1976	105,860	843	114,010	511	16,212	1736	30,885	597
1977	109,964	761	84,703	399	14,059	1477	40,986	461
1978	123,640	735	62,284	393	14,010	1385	52,565	431
1979[b]	134,907	685	67,657	396	8,639	1244	59,000	N.A.

[a] Prices are deflated with the GDP deflator using a 1966 base year.

[b] Preliminary estimates.

N.A. is data not available

Source: Banco Central de Costa Rica.

percent annual rate of increase in production). This strong output performance has been associated with a decrease in the deflated farm price of rice (nominal price divided by the GDP deflator) of 20-25 percent from the early 1970s to the late 1970s. Even though real rice prices have decreased, production has increased because of changes in technology and a highly subsidized crop insurance scheme. Yields have increased because of the introduction of improved varieties while the location of rice prodution has shifted from the Pacific North to the Pacific South which has a more favorable distribution of rainfall. A second factor contributing to increased rice production has been the introduction of a highly subsidized crop insurance scheme which primarily benefits rice producers. A recent study by Vargas et al. shows that the crop insurance program of the National Insurance Institute has incurred large deficits throughout most of the 1970s as premiums paid were equal to slightly over 20 percent of the damages paid for crop failures, and most of these damages were paid to a limited number (about 400) of rice producers.4/

Sorghum production has increased from about 9,000 metric tons in the early 1970s to over 50,000 tons in the late 1970s, an average annual rate of increase of 30 percent, which is higher than that of any other grain. The deflated farm price for sorghum at the end of the 1970s was slightly higher than that at the beginning of the decade, but below the level which prevailed in the mid 1970s (Table 1). On the other hand, the stagnation of corn production appears to be related to less favorable deflated farm prices even though nominal prices were increasing. In response to increasing deflated

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4/ See Vargas et al. [1979], for a complete analysis of the crop insurance program and its impact on rice production.

farm prices, corn production increased during the mid 1970s and reached a peak of 114,000 metric tons in 1976, after which corn production declined while the deflated farm price was also declining.

Bean production reached the lowest level of the decade in 1979, slightly over half the 16,212 metric tons produced in 1976. The large bean crop of 1976 occurred just after the deflated farm price of beans reached a peak in 1975 which was double the deflated farm price of beans in 1970. From 1975 to 1979 the deflated farm price of beans declined by over 35 percent while production declined slowly through 1978 and then decreased dramatically in 1979. One of the difficulties in analyzing bean price and production relationships is that data on bean production are quite unreliable because of the widely dispersed, small scale nature of the production system. In addition, some Costa Rican bean production may actually be illegal imports from neighboring countries such as Nicaragua, and these have decreased dramatically in 1979 because of the political unrest in that country.

Export Crops

Domestic prices for the main export crops (coffee, bananas, cocoa and sugarcane) are determined by a combination of world market trends for these products and Costa Rican government policy which is carried out through various quasi-governmental organizations. The deflated farm price of coffee and coffee production fluctuated mildly from 1970 through 1975 (Table 2). Then coffee prices nearly tripled from 1975 to 1977 and production increased rapidly in 1977 and 1978. On the other hand, banana production reached peaks of more than 1.2 million metric tons in 1973 and 1975 and has declined somewhat to a little more than 1.1 million metric tons annually since that

Table 2: Production and Prices of Export Crops, 1970-1979

Calendar Year	COMMODITY: COFFEE Production	COFFEE Deflated Farm Price[a/]	BANANAS Production	BANANAS Deflated Farm Price[a/]	COCOA Production	COCOA Deflated Farm Price[a/]
	Metric Tons	Colones per ton	Metric Tons	Colones per ton	Metric Tons	Colones per ton
1970	80,590	4423	958,689	403	4,174	3373
1971	87,715	3803	1,027,648	354	4,422	2453
1972	88,792	3495	1,186,093	371	7,055	2541
1973	92,646	4192	1,289,401	330	5,618	4169
1974	91,238	4244	1,151,277	391	5,919	5953
1975	85,259	3437	1,220,690	458	6,609	4008
1976	81,784	5453	1,187,147	416	5,855	5352
1977	87,183	8987	1,124,691	380	7,694	8595
1978	96,034	7092	1,149,117	357	10,072	6999
1979[b/]	N.A.	N.A.	1,114,494	N.A.	5,000	N.A.

[a/] Prices are deflated with the GDP deflator using a 1966 base year.

[b/] Preliminary estimate.

N.A. is data not available.

Source: Banco Central de Costa Rica

time. The deflated farm price of bananas reached a peak in 1975 and has declined by about 22 percent since that time which may explain the stagnation in banana production in the late 1970s. Cocoa production and deflated farm prices have varied widely during the 1970s; however, both production and prices began to increase in the mid 1970s. Deflated cocoa prices reached a record level in 1977 and cocoa production reached a record one year later in 1978 which indicates that cocoa production has also responded to changes in deflated farm prices.

Sugar output has increased from 159 thousand metric tons in the 1970-71 harvest to almost 195 thousand metric tons in the 1978-79 harvest, which is an annual rate of increase in output of about 2.4 percent (Table 3).[5/] This rate of growth in production has not kept pace with the strong demand for sugar in both the domestic market and the export market. As can be seen from Table 3, exports of sugar have decreased by approximately 14,000 metric tons and exports as a percent of production have decreased from slightly over half of production at the beginning of the decade to about 35 percent of production at the end of the decade. An important reason for this decline of sugar exports has been the rapid growth of domestic demand which increased from about 43 kilograms per person in 1970 to nearly 60 kilograms per person in 1979. Based on these consumption figures, domestic demand has increased at an annual rate of about 4.2 percent or nearly double the annual rate of increase in production.[6/]

[5/] The actual rate of increase in output could be somewhat different because the production data may not have captured all the production on farms that is processed and sold as crude sugar rather than being sold to a sugar mill.

[6/] The extent to which Costa Rican consumers have substituted refined sugar for crude sugar may have biased upward the actual rate of increase in consumption.

Table 3: Production, Exports and Domestic Consumption of Sugar, 1970-71 to 1978-79

Agricultural Year[a/]	Sugar Production	Sugar Exports	Exports as A Percent of Production	Domestic Consumption
	----- Metric Tons -----		Percent	Kilos/capita
1970-71	159,559	82,822	51.9	43.5
1971-72	181,441	97,715	53.9	46.2
1972-73	176,208	84,963	48.2	48.9
1973-74	166,331	68,644	41.3	52.2
1974-75	178,499	69,285	38.8	54.3
1975-76	172,846	75,366	43.6	54.3
1976-77	194,809	67,842	34.8	56.0
1977-78	191,339	70,530	36.9	57.6
1978-79	194,582	68,412	35.2	59.9

[a/] The agricultural year is from October 1 to September 30.

Source: Liga Agricola Industrial de la Cana de Azucar

Sugarcane price policy in Costa Rica consists of a completely administered price system. The Liga de la Cana, a quasi-governmental organization, controls the marketing and prices of sugarcane production and processed products in Costa Rica. The Liga sets the prices which sugar mills must pay producers, assigns production quotas to each and directs the sale of sugar production to the domestic or export market according to projected demands. Prices for sugar at all levels in the marketing system are controlled by MEIC. As can be seen in Table 4, the deflated domestic wholesale price for unrefined sugar was below the deflated FOB (free on board) export price of unrefined sugar until 1977-78. The fact that the deflated domestic wholesale prices have exceeded the export price in the last two years may indicate that the government is attempting to improve prices to farmers in real terms by using higher domestic prices to offset the decline in world prices which continued through 1978-79.

The lack of production incentives in the form of adequate prices appears to be one of the factors which explains the stagnation of sugar production. The deflated farm price for sugar in 1977-78 and 1978-79 was about equal to the deflated price for sugar in 1970-71 and 1971-72 (Table 4). However, the deflated farm price of sugar increased by over 50 percent from 1970-71 to 1974-75 before falling to the level prevailing at the beginning of the decade. Sugar production also increased rapidly because of more favorable farm prices and worldwide prices for sugar in that period.

Livestock Products

Total slaughter of beef cattle has increased at the relatively slow rate of about 1 percent annually during the decade of the 1970s. As can be seen in

Table 4: A Comparison of Export, Wholesale and Farm Prices of Unrefined Sugar, 1970-71 to 1978-79

Agricultural Year	Deflated FOB Price of Unrefined Sugar Exported from Costa Rican Ports[a/]	Deflated Wholesale Price of Unrefined Sugar in San Jose[b/]	Deflated Farm Price Equivalent of Unrefined Sugar Price[c/]
	- - - - - Colones per metric ton - - - - -		
1970-71	877	894	433
1971-72	998	841	441
1972-73	1043	732	427
1973-74	1639	594	556
1974-75	3204	608	719
1975-76	1267	591	479
1976-77	839	617	468
1977-78	649	725	460
1978-79	355	762	437

a/ Converted to colones at the official exchange rate for each year and deflated with the GDP deflator using a 1966 base year.

b/ Prices are for the calender year 1970 through 1978 and are deflated with the GDP deflator using a 1966 base year.

c/ Calculated from the average farm price paid for cane adjusted to reflect the average annual yield of sugar per ton of cane and deflated with the GDP deflator using a 1966 base year.

Source: Liga Agricola Industrial de la Cana de Azucar.

Table 5, total slaughter from 1970 to 1973 averaged about 114,000 metric tons, it increased to a higher 125,000 metric ton level from 1974 to 1976 and then increased again to over 130,000 metric tons from 1977 to 1979. This total slaughter is divided between a domestic market which, as can be seen in Table 5, has increased from 30 percent to 45 percent of total slaughter and an export market which has declined relatively and absolutely. Of the exported beef, over 95 percent is sold to the United States, most of it as frozen boneless beef.

The main policy instruments used by by the Costa Rican government to intervene in the beef cattle market are export quotas and price controls. The CNP implements the export quota policy and the MEIC implements the price control policy. Because a higher price for beef exists in the export market than in the domestic market, an export quota has been devised to control the flow of cattle between these two markets. After obtaining an estimate of total slaughter based upon historical data and producer declarations of male cattle available for export, the CNP estimates domestic beef consumption needs and deducts this from total slaughter. The remainder is the amount available for export which is assigned as a quota to each export slaughter plant and beef producer.[7/] The MEIC sets retail and wholesale price ceilings for beef which, in combination with the export quota, maintains lower beef prices in the domestic market than in the export market.

The price trend for beef cattle in the domestic market and the export market, as well as the weighted average of the two markets for Costa Rican

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7/ See Stein for a thorough discussion of the beef export quota system in Costa Rica.

Table 5: Beef Cattle Production, Exports and Domestic Consumption, 1970-1979

Calendar Year	Total Slaughter		Exports	Domestic Consumption	Domestic Consumption As a Percent of Total Slaughter
	No. of Head	Quantity			
			- - - - - - metric tons - - - - - -		
1970	280,043	111,037	77,945	33,092	30%
1971	291,567	116,090	68,918	47,172	41
1972	301,245	115,705	73,354	42,351	37
1973	312,546	116,408	74,332	42,076	36
1974	325,713	127,734	85,819	41,915	33
1975	339,489	128,112	78,283	49,829	39
1976	340,344	124,998	72,948	52,050	42
1977	341,436	134,144	78,359	55,785	42
1978	354,963	145,959	82,636	63,323	43
1979[a/]	340,365	137,120	75,580	61,540	45

[a/] Preliminary estimates.

N.A. is data not available.

Source: Banco Central de Costa Rica

producers, reveals that the deflated price of beef cattle has decreased by approximately 25 percent in the decade of the 1970s. As can be seen in Table 6, the export price is about 30 percent higher than the domestic price for beef cattle which suggests that government policy has an adverse impact on domestic prices to beef producers.[8/] Although nominal prices have increased throughout the decade, deflated farm prices reached their peak in 1973 and have declined fairly steadily since that time. Such declining prices may explain the stagnation of beef cattle production.

Hog production increased at an average annual rate of 4.6 percent in the 1970s, being fairly stable from 1970 to 1975 and then increasing rapidly from 1976 to 1978 (Table 7). The deflated price of hogs was also quite stable from 1970 to 1975 and then declined by about 10 percent near the end of the decade. Even though pork production has increased at a relatively favorable rate, Costa Rica has had to import increasing amounts of pork to fill the gap between domestic demand and supply. Broiler production has increased fairly steadily at an annual rate of 3.5 percent during the 1970s (Table 7). This is quite a favorable performance when one considers that the deflated farm price of broilers decreased by about 10 percent from the beginning to the end of the decade.

As can be seen in Table 7, milk production has increased from approximately 200 million liters in 1970 to slightly over 306 million liters in 1979,

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[8/] In February, 1980, a new price policy which eliminated this price differential was approved by the Comision Reguladora de la Carne which contains representatives of the beef cattle producers, processors and the government.

Table 6: Domestic and Export Prices of Beef, 1970-79

Calendar Year	Producer Price in Domestic Markets[a] Current Price	Producer Price in Domestic Markets[a] Deflated Price[b]	Producer Price In Export Market[a] Current Price	Producer Price In Export Market[a] Deflated Price[b]	Weighted Average Producer Price in Both Markets[a] Current Price	Weighted Average Producer Price in Both Markets[a] Deflated Price
	- - - - - Colones per metric ton live weight - - - - -					
1970	2540	2170	3013	2574	2733	2335
1971	2650	2210	3048	2542	2823	2354
1972	2850	2233	3733	2925	3272	2564
1973	3910	2668	4688	3199	4249	2899
1974	4190	2320	4330	2398	4258	2358
1975	3806	1692	4785	2128	4337	1928
1976	3869	1475	4984	1901	4509	1719
1977	4043	1318	5327	1737	4794	1563
1978	5270	1593	7046	2129	6276	1897
1979[c]	7080	1949	10463	2880	8945	2462

[a] The beef cattle price available in Costa Rica is that established at the Montecillos market - the principle beef cattle market in Costa Rica

[b] Prices are deflated with the GDP deflator using a 1966 base year.

[c] Preliminary estimates.

Source: Banco Central de Costa Rica

Table 7: Production and Prices of Livestock Products, 1970-1979

Calendar Year	COMMODITY: MILK Production	MILK Deflated Farm Price[a/]	HOGS Production	HOGS Deflated Farm Price[a/]	BROILERS Production	BROILERS Deflated Farm Price[a/]
	Thousand Liters	Colones per 000 liters	Metric Tons	Colones per ton	Metric Tons	Colones per ton
1970	206,093	804	9,447	2861	4,217	3186
1971	209,508	920	10,234	3410	4,411	3052
1972	221,979	905	10,271	3323	4,677	3589
1973	235,298	788	10,415	3248	4,722	3295
1974	240,916	908	10,560	3306	4,900	3688
1975	250,774	945	9,619	3348	5,091	3255
1976	271,750	864	11,529	3089	5,415	2898
1977	290,299	749	12,509	3082	5,427	2834
1978	300,808	778	13,710	3043	5,590	2593
1979[b/]	306,524	770	N.A.	N.A.	N.A.	N.A.

[a/] Prices are deflated with the GDP deflator using a 1966 base year.

[b/] Preliminary estimates.

N.A. is data not available.

Source: Banco Central de Costa Rica

an average annual increase in production of about 4.8 percent.[9/] This would seem to be an adequate growth rate of output, but it has slowed to only a 1.0 percent annual growth rate in 1978 and 1979, which is much less than the growth rate of demand for dairy products, and this has necessitated increased imports.

Price policy in the dairy industry consists of maximum selling prices for fluid milk administered by MEIC which are set below the market clearing price and are applied at all levels in the marketing channel from the producer to the consumer. The processors indicate that price controls such as those for fluid milk result in an excess demand for the product and they must ration the limited supply among all consumers. Some of the ways which have been used to ration fluid milk consist of changing from daily delivery to homes or stores to an every other day delivery. In addition, processed milk products such as cheese, ice cream and yogurt do not have price controls so that processing plants may divert milk to those more profitable products, thereby further reducing the supply of fluid milk.

The milk production increases have been achieved at the same time that the deflated farm price of milk has been decreasing. The deflated farm price, about 804 colones per thousand liters in 1970 has fluctuated substantially; it reached a high of 945 colones per thousand liters in 1975 and has tended to decrease since then to 770 colones per thousand liters in 1979. It is somewhat surprising that milk production has continued to increase during the

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9/ Since reliable estimates of raw milk production and consumption in rural areas are difficult to obtain, the annual rate of increase in production may be inflated because of the substitution over time of pasteurized milk for raw milk.

last half of the decade in view of the declining price for the output; however, one would expect more of a lag in the production response to price changes for milk than for products with an annual production cycle. Because of declining prices, farmers may reduce milk output in the short run by temporarily cutting back on the amount and quality of inputs such as the feed concentrates used for milk cows and the amount of urea and other fertilizers which they apply to their pastures. Conversations with milk producers indicated that such reductions in the use of purchased inputs appear to have taken place in the Meseta Central and North during 1979. If prices continue low for long periods, producers will begin selling their milk cows for slaughter and diverting the pasture land to production of more profitable crops. The lack of current and reliable data on the dairy cow herd does not permit analysis of those numbers to observe whether dramatic changes in dairy cow numbers have occurred.

III. International Price Comparisons

When the prices of agricultural products in Costa Rica are compared with the prices of these same products in other countries, and these comparisons are made at the official exchange rate for the Costa Rican colon, Costa Rica appears to be non-competitive in the production of many agricultural products. However, using the official Costa Rican exchange rate for such comparisons is inappropriate and misleading. Using the offical exchange rate is not only likely to mislead government officials in setting price policies for the agricultural sector, but also directly affects agricultural output through incentives for producers. If, as is the case in Costa Rica, the official exchange rate is over-valued, then revenues received in domestic currency for export

sales are accordingly reduced, so that the incentives for producers to export, or even to produce those products which might be exported, are thereby reduced.10/

There are two separate reasons for arguing that the Costa Rican colon is over-valued, and each of these must be taken into account independently in arriving at an estimate of the exchange rate which should be used in making international price comparisons. The first reason is based on traditional purchasing power parity arguments.11/ In mid-1974 Costa Rica officially devalued by unifying its multiple exchange rates at the higher free market rate of 8.57 colones per U.S. dollar, and this fixed official rate was maintained throughout the rest of the 1970s. From mid-1974 to mid-1979 the Costa Rican wholesale price index increased by 81 percent, while the wholesale price index in the United States, Costa Rica's major trading partner, increased by 47 percent. Assuming that the official exchange rate adopted in mid-1974 was an equilibrium rate at that time and using the relative changes in wholesale prices in Costa Rica and the United States implies that the Costa Rican colon was over-valued by 23 percent as of mid-1979. It can further be argued that the mid-1974 devaluation was insufficient to remove completely the over-valuation of the colon even at that time, as the large deficit in Costa Rica's balance of trade persisted after 1974. In fact, by the beginning of the 1980s this deficit had become so large that Costa Rica was forced to abandon its unified official exchange rate of 8.57 and in September, 1980, adopted a

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10/ See Schuh [1974] for an analysis of exchange rate policy and U.S. agriculture.

11/ See Officer [1976] for a discussion of these arguments.

system under which half of most international transactions take place at the official rate and half at a free-market rate. By mid October the free-market rate exceeded 13 colones per U.S. dollar, which implies an over-valuation of more than 25 percent for the official exchange rate if the equilibrium rate is assumed to be half way between the official and free-market rates.

To this estimate of the over-valuation of the official exchange rate, must be added an estimate of the over-valuation due to the structure of protection. It is now widely recognized that the protection of import-competing activities through tariffs and other trade barriers implies negative protection for export activities, in part because the domestic currency is valued higher vis-a-vis foreign currencies than it otherwise would be.[12/] Tariffs and other barriers against imports reduce the demand for foreign exchange and thereby raise the value of the domestic currency. Estimates of over-valuation due to the structure of protection are based on comparing the existing exchange rate with estimates of what the exchange rate would be under a regime of free trade. This depends, in turn, on estimates of the elasticities of demand for imports and of supply and demand for exports together with the rate of tax (or subsidy) on exports and the rate of nominal protection for imports (including both tariffs and other trade barriers).[13/] Estimates for Costa Rica based on data for 1978 yield an over-valuation of slightly more than 20 percent, and this figure is quite insensitive to

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12/ See Belassa and Associates [1971] for a full discussion of effective protection and for estimates of effective protection for several developing countries including Brazil and Chile.

13/ See Bacha and Taylor [1979].

substantial changes in the elasticity estimates. However, it is likely to be an under-estimate of over-valuation for several reasons, primarily the difficulty of quantifying all non-tariff barriers against imports.[14/] In addition, the changes in foreign exchange markets which were initiated in September, 1980, involve a substantial increase in nominal protection as many tariffs were increased and a system of prior deposits for imports was instituted.

When the official exchange rate is used to compare farm level prices in Costa Rica with those in the United States, one set of conclusions is reached about the competitiveness and efficiency of Costa Rican agriculture, but the conclusions are strikingly different when the over-valuation of the exchange rate is taken into account. As shown in Table 8, the ratio of Costa Rican farm level prices to U.S. farm level prices at the official exchange rate suggests that Costa Rica is more efficient than the United States only for beef among the eight commodities examined. However, when a 40 percent over-valuation of the official exchange rate is taken into account, (which is quite conservative given the foregoing estimates) Costa Rica is more efficient in five of the eight commodities: rice, milk, pork, and possibly beans, as well as beef. Such a dramatic change in the competitive position for these products indicates clearly that an over-valued exchange rate can introduce serious distortions in government price policies and can eliminate price incentives for producers of actual or potential exports.

[14/] The estimate of a 20 percent over-valuation in Costa Rica due to protection appears quite modest compared to the estimates of Belassa and Associates of 27 percent for Brazil and 68 percent for Chile as of the mid-1960s.

Table 8: Comparison of Farm Prices in Costa Rica and the U.S. at the Official Exchange Rate and Adjusted for a 40 percent Over-Valuation of the Costa Rican Colon

Commodity	Average Farm Price in Costa Rica	Ratio of Costa Rican Price to U.S. Farm Prices at	
		Official Exchange Rate	Exchange Rate Adjusted 40%
	Colones per Metric ton	8.57 Colones per U.S. $	12.00 Colones per U.S. $
Rough Rice			
1977/78	1817	1.01	0.72
1978-79	1911	1.24	0.88
Corn			
1977/78	1630	2.37	1.70
1978/79	1783	2.39	1.71
Sorghum			
1977/78	1405	2.27	1.63
1978/79	1405	2.10	1.50
Dry Edible Beans			
1977/78	4891	1.39	0.94
1978/79	4891	1.32	0.99
Beef			
1978	6276	0.68	0.49
1979	8945	0.72	0.51
Milk[a/]			
1978	2574	1.26	0.90
1979	2799	1.19	0.85
Hogs			
1977	9450	1.27	0.91
1978	10070	1.14	0.82
Broilers			
1977	8690	1.95	1.39
1978	8579	1.73	1.23

[a/] The price of milk is in Colones per thousand liters.

Sources: Banco Central de Costa Rica and U.S. Department of Agriculture, FSCS, "Agricultural Prices."

Since Costa Rican beef prices are about 70 percent of U.S. farm prices at the offfcial exchange rate and about 50 percent of U.S. farm prices when the over-valuation is considered, the Costa Rican beef industry should be in a strong competitive position in the export market. However, performance has not equalled this expectation. Because real (deflated) beef prices in Costa Rica have declined by about 25 percent during the 1970s, beef production has stagnated and beef exports have declined not only in absolute terms but also from 70 percent of total production to 55 percent. Stagnation resulting from low prices for producers is ultimately due to beef prices set low for Costa Rican consumers together with an over-valued exchange rate for beef exports. A more appropriate exchange rate could markedly increase producers revenues and thus provide the incentive necessary for increased beef output.

Rice also appears to have strong potential as an export, but relatively little has actually been exported because the over-valued exchange rate misleads the government policy makers who set support prices and distorts price signals to domestic producers. As can be seen from Table 8, adjusting the official exchange rate for a 40 percent over-valuation makes Costa Rican farm level prices for rice about 20 percent lower than U.S. farm level prices. International price comparisons at an appropriate exchange rate thus indicate that Costa Rican rice producers are quite competitive, something which is not apparent when the official exchange rate is used.

Distortion of price policies and incentives through an over-valued exchange rate can also be found in the Costa Rican dairy industry, even though the dairy industry is oriented toward the domestic market. It has frequently been argued that Costa Rica has a high cost, inefficient dairy industry which already receives too high a price for fluid milk. Evidence presented to

support this argument is that milk solids can be imported and reconstituted for sale as fluid milk in Costa Rica at a price competitive with locally produced milk. However, this argument ignores the fact that an over-valued exchange rate not only taxes the producers of export goods but also subsidizes the users of import goods. Because of the over-valued exchange rate, it appears more attractive to import milk solids than to raise domestic milk prices and thereby encourage domestic production. When the 40 percent over-valuation of the official exchange rate is taken into account, Table 8 shows that Costa Rican farm level prices for milk are 10-15 percent below U.S. farm level prices. The Costa Rican dairy industry is thus not so inefficient and high cost as has been argued, and higher domestic milk prices may be preferable to importing milk solids which are subsidized through an over-valued official exchange rate.

For some commodities, such as corn and sorghum, Costa Rican farm level prices remain substantially above U.S. farm level prices even when the over-valuation of the official exchange rate is taken into account, which confirms that Costa Rica is not competitive in these products. In the case of beans, a 40 percent adjustment of the official exchange rate yields Costa Rican farm level prices which are about the same as U.S. farm level prices. Wide price fluctuations and a failure to focus on technical problems of bean production, rather than the inefficiency of domestic producers may have been the principal handicaps for bean production.

International price comparisons for hogs at an exchange rate adjusted for over-valuation indicate that Costa Rican farm level prices are quite competitive with U.S. farm level prices, but broiler prices remain substantially higher in Costa Rica than in the United States. The main barrier to increased

production of pork, and especially broilers, appears to be the high cost of feed grains which comprise a high percentage of the production costs for these products. Since the official exchange rate is over-valued, it might seem that pork and poultry producers benefit from a subsidy on imported feed grains. However, as discussed above, feed grain prices (e.g., corn and sorghum) remain high even when the exchange rate is adjusted for overvaluation. The CNP controls grain imports and thereby maintains the domestic prices of these inputs for pork and poultry substantially above world market levels.

IV. Agricultural Credit

The commerical banking system has traditionally been the predominant source of agricultural credit in Costa Rica, accounting for two-thirds to three-quarters of agricultural lending, with most of the rest spread among a variety of informal sources such as moneylenders and friends and relatives.[15/] No comprehensive survey has been carried out during the 1970s, but it is likely that the commerical banks have maintained their share of agricultural lending, while the growth of financieras (quasi-banks which avoid most government banking regulations) and agricultural suppliers has eroded the shares of other informal sources of credit. The Costa Rican banking system consists of a Central Bank and four commercial banks, all of which are owned by the government of Costa Rica, but which operate with some autonomy, especially the commercial banks. The most important attributes of commerical bank agricultural lending in Costa Rica, at least until the financial reform of late 1978, have been the low interest rates set by the Central Bank and the

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[15/] See Vogel and Gonzalez-Vega [1969].

limits (both minimum and maximum) which the Central Bank sets on the amount of credit to be made available for different activities.

Throughout most of the 1970s, interest rates on bank agricultural loans have been set between 8 and 11 percent, with the lowest rates on loans for small farmers and for certain preferred activities such as planting basic grains and oilseeds. The argument for these subsidized low interest rates, which have even been below the rate of inflation in Costa Rica during several years of the 1970s, is that they improve the distribution of income and promote agricultural production in the face of other distortions which place the agricultural sector, and especially small farmers, at a disadvantage.16/ With respect to the distribution of income, bank agricultural loans have been found to be highly concentrated in large loans to relatively wealthy farmers, a pattern unlikely to facilitate an improvement in income distribution.17/ As will be shown below, the relationship between subsidized credit and agricultural production is also unclear, inspite of the Central Bank's limits on lending for different activities. This is due in part to two elements which weaken the Central Bank's system of credit limits: (1) the commercial banks are sometimes able to lend less than the minimum limit or more than the maximum; and (2) the limits apply to broadly-defined activities (e.g., planting seasonal crops) and not to specific activities (e.g., planting corn). However, the most important reason is borrower behavior, that is, even loans that are said to be for the planting of corn do not necessarily lead to more corn being planted.

16/ See Lizano, [1980] Chapter IV.

17/ See Vogel, [1977].

Table 9 shows for each of the principal crops the amount of credit disbursed by the commercial banks for each year, 1970 through 1978, and the percentage of total bank agricultural credit accounted for by each crop. In addition, bank agriculture credit is shown as a percentage of total bank credit and in real terms (using the deflator for gross domestic product). Data for 1979 are not shown, in part because the breakdown by crop is not yet available, but especially because the year since the financial reform of late 1978 deserves separate attention. Although the agricultural sector may be favored with subsidized low interest rates, it is not clear that the agricultural sector has been favored with abundant credit. Bank agricultural credit has not only tended to decline as a share of total bank credit during the 1970s, but has even failed to keep pace with inflation during most years. If a principal purpose of government credit policy is to promote agricultural production, the volume of credit available is likely to be more important than subsidized low interest rates.

It is also important to look for consistent relationships for individual crops between production and the amount of bank credit allocated. However, it must be recognized that any such relationship may be due as much to the demand for credit by producers as to Central Bank policies which attempt to allocate the supply of credit. Looking first at the main export crops, it is difficult to find any consistent evidence of a close relationship between Costa Rican bank credit and production. For coffee, Costa Rica's most important export in most years, production has tended to rise somewhat during the 1970s in the face of a decline in bank credit in real terms and as a share of total agricultural credit. Bananas, usually the second most important export, have never been allocated an appreciable amount of credit by Costa Rican banks.

Table 9: National Banking System
Distribution By Product of Credit Disbursed for Agriculture, 1970-1978

(Millions of Colones and Percents)

	1970		1971		1972		1973	
	Amount of Credit	Percent of Credit	Amount of Credit	Percent of Credit	Amount of Credit	Percent of Credit	Amount of Credit	Percent of Credit
1. Coffee	470.5	64.2	461.5	47.8	454.1	47.8	528.7	45.4
2. Bananas	14.8	2.0	25.8	2.7	4.6	0.5	2.8	0.2
3. Cacao	1.6	0.2	1.5	0.2	1.0	0.1	2.0	0.2
4. Sugar Cane	27.7	3.8	27.9	2.9	31.9	3.4	25.2	2.2
5. Rice	23.8	3.2	39.8	4.1	43.1	4.5	43.8	3.8
6. Corn	2.4	0.3	6.3	0.6	8.9	0.9	6.3	0.5
7. Beans	1.8	0.2	1.8	0.2	1.5	0.2	1.2	0.1
8. Sorghum	0.1	0.0	0.5	0.1	1.0	0.1	1.8	0.2
9. Beef Cattle	163.4	22.3	268.0	27.8	267.2	28.1	428.5	36.8
10. Dairy Cattle	11.7	1.6	36.5	3.8	32.7	3.4	20.8	1.8
11. Hogs	0.6	0.1	2.8	0.3	3.9	0.4	2.5	0.2
12. Poultry	2.2	0.3	4.4	0.4	4.7	0.5	5.5	0.5
13. Other	11.6	1.6	88.7	9.2	96.1	10.1	93.9	8.1
14. Total	732.3	100	965.6	100	950.8	100	1,163.2	100
15. Deflated Amount of Credit[a/]	625.6		805.2		745.1		793.7	
16. Amount of Credit for Agriculture as a percent of all Bank Credit		49.9		45.6		43.0		44.7

Table 9: cont'd

	1974		1975		1976		1977		1978	
	Amount of Credit	Percent of Credit	Amount of Credit	Percent of Credit	Amount of Credit	Percent of Credit	Amount of Credit	Percent of Credit	Amount of Credit	Percent of Credit
1.	649.9	42.5	591.1	32.5	582.7	30.2	348.3	16.7	411.5	16.5
2.	29.4	1.9	1.0	0.0	7.1	0.3	15.9	0.7	6.2	0.2
3.	2.1	0.1	7.8	0.4	8.8	0.4	8.6	0.4	6.8	0.3
4.	43.4	2.8	102.8	5.7	37.0	1.9	97.5	4.6	58.0	2.3
5.	74.7	4.9	244.5	13.5	244.9	12.7	212.3	10.1	236.7	9.5
6.	12.3	0.8	38.4	2.1	40.9	2.1	41.4	2.0	29.3	1.1
7.	8.0	0.5	16.4	0.9	11.3	0.6	12.9	0.5	9.4	0.3
8.	8.5	0.6	25.4	1.4	32.3	1.7	38.5	1.5	48.7	1.9
9.	475.8	31.1	390.1	21.5	424.3	22.0	542.6	26.0	668.4	26.9
10.	33.9	2.2	48.9	2.7	75.5	3.9	146.5	7.0	146.1	5.8
11.	2.8	0.2	4.3	0.2	7.1	0.4	10.7	0.5	19.8	0.8
12.	10.5	0.7	6.2	0.3	14.4	0.7	18.4	0.8	16.3	0.6
13.	176.2	11.5	333.4	18.4	435.4	22.6	565.6	27.3	827.1	33.3
14.	1,527.5	100	1,816.7	100	1,924.6	100	2,068.6	100	2,486.2	100
15.	845.9		807.8		734.0		674.6		751.4	
16		40.0		37.9		38.0		37.8		37.1

a/ The amount of credit is deflated with the GDP deflator using a 1966 base year.

Source: Banco Central de Costa Rica.

Bank credit for cocoa rose to a substantially higher level beginning with 1975, and production rose appreciably in 1977 and 1978. However, the increase in cocoa prices beginning in 1973, and especially in 1977 and 1978, may be more responsible for the increases in credit and production than any attempts by the Central Bank to allocate more credit to cocoa. Bank credit for sugarcane has been quite erratic, with especially large increases in 1975 and 1977, but these fluctuations do not appear closely related to fluctuations in production.

For basic grains any relationship between credit and production would be especially interesting because of the number of programs that Costa Rica has had to promote the production of basic grains, including several credit programs. High prices for rice in 1974 and 1975 led to substantial increases in production and bank credit for rice in 1975 and 1976. Since then, rice production has continued at a high level, especially in 1978 and 1979, while bank credit for rice has fallen in real terms and as a share of total agricultural credit. Corn production and credit both fluctuated somewhat during the early 1970s, but without any close association. However, in 1975 bank credit for corn rose to its highest level in real terms and as a share of total agricutural credit, while production continued at a low level. Corn production reached a peak in 1976 and has since settled back to its earlier level, while bank credit for corn has continued to be more important in the late 1970s than earlier in the decade. The pattern for bean production and credit is similar to corn. Bank credit increased sharply in 1974, while bean production remained below its 1972 level. Bean production reached its peak in 1976, after bank credit for beans had begun to taper off. Only sorghum, of

the four basic grains, shows a pattern of increasing bank credit accompanied by increasing production.

The relationship between meat production, especially beef, and favorable credit conditions (or favorable prices) is much more difficult to detect because increased credit may initially lead to less slaughter as producers build their herds in anticipation of increased long-run profits. Bank credit for beef cattle tended to increase during the early 1970s, reaching a peak in 1973 and 1974 in real terms and as a share of total agricultural credit, but fell sharply in 1975 and 1976, and then rebounded somewhat in 1977 and 1978. Beef production remained quite stable from 1970 through 1973, fluctuated around a higher level from 1974 through 1976, and then fluctuated around a still higher level from 1977 through 1979. Bank credit for hogs increased appreciably in 1971 and 1972 and then declined somewhat in the following two years, while hog production fluctuated with no clear trend from 1970 through 1975. Only since 1975 has there been a steady upward trend in both production and bank credit for hogs. Broiler production has tended to increase quite steadily throughout the 1970s, while bank credit increased very modestly through 1973, then rose sharply, fell back and rose again in the subsequent three years, and finally remained fairly stable in 1977 and 1978. Milk production has also risen at a fairly steady pace during the 1970s, while credit for dairy cattle has shown significant fluctuations. Bank credit increased greatly in 1971, fell back the next two years, and then returned to its former level in real terms and as a share of total agricultural credit over the following two years, before increasing sharply in 1976 and 1977 and falling back again in 1978.

The examination of production and bank credit during the 1970s for most of Costa Rica's main agricultural products does not give the impression of any close association between credit and output. Given the impact of the government's price policies on agricultural production, there is little indication that bank credit at subsidized low interest rates has effectively either complemented these price policies or offset any distortions that may have been induced. Recent studies of rural financial markets which emphasize the fungibility of credit help to explain why this is so.[18] Because credit is fungible, preferential low interest rates for the agricultural sector will fail to redirect resources toward favored activities in the agricultural sector. Preferential low interest rates do not change the prices paid by farmers for inputs or received for output or the technologies available to them and hence leave unchanged the relative profitability of agricultural and non-agricultural activities as well as different activities within the agricultural sector.

Since credit provides general command over resources, it cannot easily be tied to the production of particular goods. Diversion of loans to other than the prescribed uses by farmers has been found to be widespread whenever audits of credit use have been carried out.[19] Even diligent and costly programs of credit supervision have failed to eliminate diversion and, in any case, are based on the dubious assumption that supervisors know better than farmers what farmers should be producing and how they should be producing it.[20] More

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[18] See especially Von Pischke and Adams, [1980].

[19] Few of these studies have been published because they are typically carried out on a confidential basis by international lending institutions.

[20] See Lipton, [1976] for a strong attack on credit supervision from a somewhat radical perspective.

subtle and pervasive than outright diversion is the case in which the farmer presents the lender with his most attractive undertaking, one which would be carried out even if a loan were not received, and then uses the additional resources obtained with the loan for some unspecified activity. Such behavior is especially likely for relatively wealthy farmers who, as mentioned above, obtain the lion's share of bank agricultural credit in Costa Rica and who most often have a variety of activities both inside and outside the agricultural sector.

As indicated above, Costa Rica underwent a major financial reform in late 1978, so that the pattern of credit allocation for 1979 deserves special attention, even though information on credit for individual crops is not yet available. The main element in this financial reform was a substantial increase in some interest rates and a complete freeing of others from Central Bank control. However, certain interest rates, especially for activities within the agricultural sector, have continued to be fixed at low levels. Small farmer loans continue to be made at 8 percent per year and short-term loans for seasonal crops at 10 percent, while certain livestock activities are financed at preferential rates, but mostly above 10 percent. Interest rates on loans from the financiera sections of the commercial banks are uncontrolled and have ranged from 20 to 25 percent during 1979, while the rate on loans from the banks' commercial sections continues to be set by the Central Bank, but at a rate which varies according to the London inter-bank rate, and has fluctuated somewhat below 20 percent during 1979.[21/]

[21/] Costa Rican commercial banks are divided into departments, among which the most important are the commercial and financiera sections.

The interest rates paid on time deposits also vary according to the London inter-bank rate and have ranged around 15 percent during 1979, while no interest is paid on demand deposits and the rate on savings deposits is fixed at 8 percent. As might be expected, time deposits grew rapidly during 1979 relative to both demand deposits and savings deposits. Given the structure of Costa Rican commercial banks, this has implied more resources available to the financiera sections to be lent at higher uncontrolled rates compared to the resources available to the commercial sections to be lent at lower preferential rates (either fixed or flexible). This relative lack of resources for the commercial sections could, of course, have been offset by Central Bank lending or by borrowing from foreign sources. In fact, these sources were used heavily during 1979 as domestic credit from the Central Bank to the commerical banks more than tripled, while the Central Bank almost doubled the foreign resources channelled to the commercial banks, and the commercial banks themselves increased their direct borrowing from foreign sources. The foreign resources helped to offset the large deficit in Costa Rica's balance of trade, but more significantly almost all of these resources went to finance Costa Rica's large government deficit, as commercial bank lending to the public sector almost tripled during 1979.

The net result of the interest rate reform, together with the foreign borrowing and the government's deficit, was that commercial bank credit to the private sector increased very little even in nominal terms during 1979 and actually declined in real terms. Moreover, all of the increase was in high interest rate loans from the financiera sections, as loans outstanding from the commercial sections to the private sector were virtually the same at the end of 1979 as at the end of 1978. Agriculture fared somewhat worse than the rest

of the private sector. Its share of bank credit outstanding to the private sector fell from 43.5 percent at the end of 1978 to 41.5 percent at the end of 1979, while its share of new loans disbursed was 37.1 percent during 1978 and 35.3 percent during 1979. Agriculture actually increased its share of credit from the commercial sections and maintained its share of credit from the financiera sections. However, agriculture has traditionally depended heavily on the commerical sections and only lightly on the financiera sections, so that the substantial decline of the commercial section relative to the financiera sections led to the overall decline in bank credit to the agricultural sector.

It is too soon to evaluate the impact of these changes on agricultural production because production figures for 1979 are still preliminary and figures on bank credit by crop are not yet available. However, the fact that the agricultural sector lost out relative to the rest of the private sector which in turn lost out to the public sector in credit from the banking system suggests some problems. The main problem for agriculture from the financial reform does not appear to be the higher interest rates, as the agricultural sector was able to maintain its share of credit from the financiera sections where allocation is largely based on borrower demand, but rather in the restriction of credit from the commercial sections which have traditionally been the main source of agricultural credit. A more complete interest rate reform which allows higher interest rates on commerical section loans could help to resolve this problem.

V. Conclusion

Costa Rican agricultural production has tended to stagnate during the 1970s, especially during the second half of the decade. Adverse government

price policies for the agricultural sector have contributed substantially to this stagnation. Although the prices of most agricultural products have risen in nominal terms during the 1970s, converting to real prices using the deflator for gross domestic product reveals much lower relative prices for most agricultural products at the end of the decade than at the beginning or in mid-decade. Government price policies for the agricultural sector have either ignored the reality of inflation or have attempted to combat inflation through agricultural price controls, and these have been costly policies in terms of agricultural output foregone.

The government may have been misled by making inappropriate international price comparisons based on the official exchange rate, comparisons which suggest that Costa Rican is an inefficient and noncompetitive producer for many of its main agricultural products. When the official exchange rate is adjusted for an over-valuation of at least 40 percent, Costa Rican producers are shown to be efficient and competitive in a variety of agricultural products which are not currently being exported or are even being imported. Thus, Costa Rica is not only foregoing agricultural output but is also wasting foreign exchange at a time of large balance of trade deficits. Moreover, government credit policies of subsidized low interest rates on bank agricultural loans have done little or nothing to offset the effects of adverse price policies. Because credit is fungible it cannot readily be tied to particular activities, and low interest rate loans do not change the relative profitability of different activities either inside or outside the agricultural sector. The main result of recent government credit policies has been to reduce the flow of bank credit to the agricultural sector in real terms, thereby complementing government price policies in their discrimination against the agricultural sector.

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